FINAL DRAFT

REMOVAL ACTION WORKPLAN
FORMER PALM SPRINGS LANDFILL
Intersection of Gene Autry Trail and Ramon Road
Palm Springs, California

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LIST OF ACRONYMS

amsl .... above mean sea level
bgs .... below ground surface
Cal EPA .... California Environmental Protection Agency
CAM .... California Assessment Metals
CCR .... California Code of Regulations
CFR .... Code of Federal Regulations
COC .... Constituent of Concern
COPC .... Constituent of Potential Concern
cy .... cubic yard
DOT .... Department of Transportation
DQO .... Data Quality Objectives
DTSC .... Department of Toxic Substances Control
EPA .... Environmental Protection Agency
ft^2 .... square feet
GC/MS .... Gas Chromatography/Mass Spectrometry
HASP .... Health and Safety Plan
HSA .... Hollow Stem Auger
IS .... Initial Study
mg/kg .... milligrams per kilogram
mg/l .... milligrams per liter
MSL .... Mean Sea Level
NCP .... National Contingency Plan
PAH .... polynuclear aromatic hydrocarbons
PCDD .... polychlorinated dibenzo-p-dioxin
PCDF .... polychlorinated dibenzofuran
PID .... Photoionization Detector
PSL .... Palm Springs Landfill
QA/QC .... Quality Assurance/Quality Control
RCRA .... Resource Conservation and Recovery Act
RWQCB .... California Regional Water Quality Control Board
SCAQMD .... South Coast Air Quality Management District
STL .... Severn Trent Laboratories
STLC .... Soluble Threshold Limit Concentration
TCLP .... Toxicity Characteristic Leaching Procedure
TSG .... The Source Group, Inc.
TTLC .... Total Threshold Limit Concentration
USCS .... Unified Soil Classification System
USGS .... United States Geological Survey
VCA .... Voluntary Cleanup Agreement
VOC .... Volatile Organic Compounds
WET .... California Waste Extraction Test

1.0 INTRODUCTION

On behalf of Geiger, LLC (Geiger; Proponent), The Source Group, Inc. (TSG) is pleased to present this Final Draft Removal Action Workplan (RAW) for removal and management of soil and landfill refuse/debris at the former Palm Springs Landfill (PSL). The former landfill is located at the intersection of Gene Autry Trail and Ramon Road, Palm Springs, California (Figures 1 and 2). This RAW is presented to the California Environmental Protection Agency (Cal EPA) Department of Toxic Substance Control (DTSC) under the terms of the Voluntary Cleanup Agreement (VCA). Under the VCA, the Site Code is 401090 and the Docket Number is HAS-A 02103-061.

1.1 PURPOSE OF THE REMOVAL ACTION WORKPLAN

The purpose of the RAW is to present the technical and operational procedures, conceptual designs, and schedule of the removal action to the DTSC. The work proposed herein includes the removal, replacement, and re-compaction of the landfill material within the existing landfill footprint. This RAW addresses the following aspects of remediation:

- Excavation and Recompaction;
- Site Restoration Activities; and
- Monitoring for Landfill Gases.

1.2 SITE DESCRIPTION AND HISTORY

1.2.1 Site Description

The combined area of the properties proposed for development includes approximately 36.6 acres. The Site is the location of a currently inactive landfill that had accepted predominantly household refuse and construction waste from the early 1930s until the mid-1960s. The southern portion of the Site was reportedly occupied by a small-scale sewage treatment plant, which operated from the late 1930's to the mid-1940s. The facility included several small buildings, a water well, and wastewater percolation basins (retention ponds). Leftover sewer sludge was reportedly used off-site for fertilizer. No sewage sludge was reported to be buried in the landfill. The sewage plant was not operated from the late 1940's to the 1960's, during the dismantling of the facility. The southern portion of the property was never used as a landfill.

During the period of landfill activity, the volume of landfill refuse was reportedly reduced in burn pits. Evidence of these burn pits was present in the historical records and documented by Leighton and Associates (Leighton) during their 1993 investigation.

Leighton (1993) estimated the volume of landfill debris to be approximately 545,000 cubic yards (yd^3), of which approximately 158,000 yd^3 and 387,000 yd^3 of the material are construction and household debris, respectively. Using Leighton's Trench Location Map, dated July 8, 1993, the surface area of the landfill is approximately 1,130,000 square feet (ft^2). The thickness of the landfill material ranges from 7.0 to 20.5 feet, with an average thickness of 15 feet. The elevation of the property ranges from 372 feet above mean sea level (amsl) in the southern portion (where there is no buried landfill material) to 388 feet amsl in the western-central portion of the property (Leighton, 1988).

Additional details can be found in Leighton and Associates' reports titled *Swat Proposal for Palm Springs Landfill, Gene Autry Trail and Ramon Road, Riverside County, California,* dated September 28, 1988 and *Interim Data Report on an Environmental Site Assessment for Potential Hazardous Materials/Waste Contamination, Palm Springs Landfill, Northeast Corner of Gene Autry Trail and Ramon Road, City of Palm Springs, County of Riverside, California,* dated August 6, 1993. Copies of those reports were included in the February 6, 2003 *Soil Sampling and Analysis Plan* (SAP) within Appendices A and B (TSG, 2003a).

1.2.2 Site History

Historical records indicate that the material contained in the landfill is comprised of inert waste and household refuse. Subsequent environmental assessment data substantiate those records. The findings from the environmental investigations reveal that the construction debris consists of concrete rubble, fractured bricks and blocks, rock, charred wood, metal, wire, cable, melted and un-melted bottles, and unburned papers (Leighton, 1993). Similarly, the household waste conforms to typical domestic refuse and includes newspaper, partially burned and unburned wood and vegetative debris, bottles, cardboard, cans, tires, fabric, plastic, wire, and cable (Leighton, 1993).

TSG reviewed aerial photographs from 1939 through 1994. The earliest photographs show retention basins on the southern portion of the Site, with some containing liquids. Small buildings were also observed in this area. Landfill operations were limited to the southwest quarter of the Site in the 1939 photograph. Landfill operations were limited to the western half of the Site in the photographs from the 1940's. Photographs from the 1950s show expansion of landfill operations to the east, in the central portion of the Site. The photograph from 1961 shows the active landfill area in the central portion of the Site.

The residential development to the north of the Site was developed in the 1950s. It is likely that burning at the landfill was limited to the 1930's and 1940's, when the landfill operations occupied the western half and east central portion of the Site, and prior to the residential development to the north.

Records indicate that the Palm Springs Army Airfield used the landfill for general refuse only, from 1942 through 1944 (City of Palm Springs, 1946). No records indicate disposal of potential munitions or other potentially hazardous materials.

1.2.3 Previous Investigations

In 1979, Irvine Soils Engineering conducted a preliminary soil geotechnical investigation to define the nature of subsurface soils. Thirty trenches were excavated to determine the scope of soil reworking (excavation and compaction) prior to potential development of the Site. No environmental testing was conducted.

In 1984, Pioneer Consultants conducted geotechnical explorations to define the extent and volume of fill material and to monitor for methane. Twenty-two borings were drilled to maximum depths of 50 feet and twelve test pits were excavated.

In 1987, Leighton & Associates performed a geotechnical assessment of the southern portion of the Site (approximately 14 acres) for proposed development. No sewage sludge was reported in the borings drilled in this area.

In 1987, Leighton performed a hazardous materials investigation of the southern 14 acres of the Site in conjunction with the geotechnical assessment. Soil samples were collected from 8 geotechnical borings. Soil samples were analyzed for volatile organic compounds (VOCs), semi volatile organic compounds (SVOCs), organochlorine pesticides, polychlorinated biphenyls (PCBs), and California Assessment Manual metals by EPA Methods 624, 626, 608, and CAM metals, respectively. In addition, a soil gas survey was conducted to assess potential methane gas. Results of the assessment indicated no hazardous material or methane gas.

In 1989, Leighton conducted a Solid Waste Water Quality Assessment Test (SWAT) for the property owner (the City of Palm Springs). The purpose of the assessment was to determine if regulated chemicals had leached from the former landfill into soil and groundwater. The assessment included the following:

- Review of agency files and records for the Site;
- Review of aerial photographs;
- Review of water well logs, water quality records and water elevation records;
- Drill soil borings and collect soil samples for analysis; and
- Install groundwater monitoring wells and collect groundwater samples for analysis

Four soil borings were drilled along the perimeter of the Site as follows: boring PSV-1, northwest corner; boring PSV2, north perimeter; boring PSV-3, east perimeter; boring PSV-4 south perimeter. Soil samples collected at depths ranging from 13 to 17 feet bgs were analyzed for

SVOC's and VOC's. None of the soil samples contained detectable concentrations of these compounds.

Two groundwater monitoring wells were installed at the Site. Well PSMW-1 was drilled in the northwest corner of the Site and well PSMW-2 was drilled in the southeast corner of the Site. Groundwater was encountered at approximately 170 feet bgs during drilling. Well PSMW-1 was constructed with well screen from 164 to 184 feet and well PSMW-2 was constructed with well screen from 159 to 179 feet. Groundwater samples were collected from both wells and analyzed for VOCs, SVOCs, CAM metals, and total dissolved solids (TDS). VOCs and SVOCs were not detected in the groundwater samples.

Iron (Fe) concentrations in groundwater ranged from 2.10 to 2.24 mg/l, exceeding drinking water standards of 0.3 mg/l. Manganese concentrations in groundwater ranged from 0.06 to 0.14 mg/l, exceeding the secondary drinking water standard of 0.05 mg/l. All other metals were below drinking water standards. TDS in the groundwater samples ranged from 230 to 232 mg/l.

In 1993, Leighton performed an extensive phase of site assessment. The assessment was conducted to assess lead, total petroleum hydrocarbons (TPH), VOC's, SVOC's, pesticides, PCB's, oil and grease, California Code of Regulations (CCR) metals, biogenic material, and fixed gases at the Site. The assessment included the following:

- Excavation of 21 test pits within the landfill portion of the Site;
- Collection of soil samples from the test pits for laboratory analysis; and
- Completion of a soil gas survey consisting of 10 sampling points in the landfill portion of the Site, and analysis of gas samples for VOCs and fixed gases

Figure 2 illustrates the test pit locations. The test pits were logged showing a description of landfill material and soil. The pits were excavated to the depth of the native soil so that native soil samples could be obtained. After completion of logging and collection of soil samples, the test pits were backfilled with the excavated material.

The greatest thickness of landfill material was 20.5 feet (Trench T-6). The thickness of the fill material is greater in the eastern and southern portions of the landfill area. Household fill material was found in the eastern portion of the fill area and consisted of newspapers, cardboard, burned and unburned wood, bottles, cans, tires, fabrics, plastic, and scrap metal. The majority of fill material was found to be household refuse.

Fill material in the western portion of the landfill appeared to be predominantly construction debris, consisting of burned material including concrete rubble, fractured bricks and rock, wood, scrap metal, wire, melted bottles, charcoal, and oxidized soils. Leighton estimated the total volume of landfill material to be 545,000 cubic yards.

Results of the Leighton investigation showed that two of the 67 soil samples collected from the test pits contained total lead concentrations that exceeded the CCR Title 22 action level of 1,000 mg/kg. Thirteen of the samples contained soluble threshold limit concentrations (STLC) that exceeded the action level (5.0 mg/L) for lead. None of the other target analytes exceeded their respective action level. Assessment records also show that, in addition to direct burial, some trash was burned before being covered. Trash burning, which was common practice in contemporaneous landfill operations, concentrates non-degradable constituents such as metals. Evidence of this phenomena associated with burning is documented by the elevated lead levels in many of the assessment trenches that were sampled by Leighton in 1993 (TI, T8, T9, T12, T13, T14, T15, T19, and T21).

Leighton and Associates documented evidence of burned debris during their 1993 environmental investigation. It should be noted, however, that during their assessment the presence of "ash" was not documented in any of the 21 trench logs that were provided in the corresponding assessment report (Leighton, 1993). Similar investigations have shown that burning of certain wastes can generate ash, which may contain COCs including PAHs, PCDDs, and PCDFs. Burned materials were found in trench locations on the northwest and northeast portions of the Site. The trench logs also indicate that predominantly building materials (wood, concrete with re-bar, brick, and panel glass) was encountered on the central and northwest portion of the Site, while predominantly household refuse was encountered on the central and northeast portions of the Site.

During March 2003, TSG conducted a focused remedial investigation was performed to assess the presence of polychlorinated dibenzo-p-dioxin and polychlorinated dibenzofuran compounds (PCDDs and PCDFs), polycyclic aromatic hydrocarbons (PAHs), and Title 22 metals. Detectable levels of PCDDs were present in three of the five soil borings during that investigation (see Section 1 of Table 1). Those compounds were present in portions of the burned landfill materials.

The chemical analyses of PCDDs and PCDFs were performed by Severn Trent Laboratories (STL) in Sacramento, California; whereas, the analyses for PAHs and Title 22 Metals were performed by American Analytics, in Chatsworth, California. EPA Method 8280A was used for the analysis of the PCDD and PCDF compounds. According to a representative from the DTSC, the method detection limits for those analyses were generally higher than other EPA 8280A analyses for the same compounds. In response to those concerns, TSG discussed the matter with STL and was informed that all analytical procedures were in strict adherence to the prescribed EPA protocols. A copy of STL's Data Quality Objectives are included in Appendix A. According to STL representatives, the detection limits are calculated for each chemical isomer and are reported relative to background "noise" levels in the respective sample. Future analytical testing by EPA Method 8290 will satisfy the DTSC's desire for lower detection limits.

No PCDFs were detected above the method detection limits within the samples collected during TSG's RI. Detectable concentrations of PCDDs were identified in the burned material located in the southwest (boring B1) and northeast (borings B3 and B6) portions of the former landfill area. Three samples contained PCDDs (B1-10-10.5, B3-5.5-6, and B6- 10-10.5). Sample B1-17.5-18, collected in native soil beneath landfill material, did not contain detectable PCDDs and PCDFs.

Five samples from borings within the former landfill area were analyzed for PAHs. Each sample analyzed exhibited evidence of burned material. Four of the samples contained detectable PAHs. All detectable concentrations of PAHs were below EPA Region 9 Preliminary Remediation Goals (PRGs) and Soil Screening Levels (SSLs).

Sampling in the former retention pond area confirmed that no sludge or pond bottom material was present in the areas assessed. Samples obtained during continuous coring showed soil characteristics similar to native soil, with no evidence of discoloration or other indications of pond bottom settlement of sediment. Previous assessments did not encounter sludge or pond bottom debris. These findings corroborate reports that the dried sludge or was removed from the Site and used as fertilizer on local farmland.

One sample from each of the four borings drilled in the former retention pond area was analyzed for CAM 17 metals. Eleven metals were detected in the samples. All detected concentrations were below the EPA Region 9 PRGs and SSLs. One sample from the former retention pond area (B8-4-4.5) was analyzed for PAHs. Benz[a] anthracene was detected, but at a concentration below the PRG and SSL for that compound.

1.3 EE/CA EQUIVALENT DOCUMENT

This RAW, in conjunction with the RI (modified format) and the Addendum to the RI report serves as an equivalent document to the Engineering Evaluation/Cost Analysis (EE/CA) document.

1.4 NATURE OF THE WASTES

1.4.1 Landfill Contents

The existing surface of the landfill poses potential environmental risks to the local public. The Site is currently unsafe due to the widespread exposure of debris, with the potential for exposure to the COCs at the Site. The terrain is strewn with jagged construction debris, broken glass, and various types of corroded metal. The surface soil may also contain elevated levels of

COPCs that have the potential to be transported off site by the predominant winds in that area. In addition, pedestrians use the landfill property as a "short cut" between local destinations.

The construction debris contained within the landfill is predominantly aggregate (rocks, concrete, and asphalt), scrap metal, and wood. The construction debris does not pose a threat to the environment or human health and will be reincorporated into the landfill mass.

The majority of the household waste is non-hazardous; however, based on recent testing may pose a threat to the environment or human health. Investigation have shown that the household refuse contains limited quantities of household hazardous wastes (not likely to be significant based on the age of the landfill). Such wastes may be in the form of cleaners, detergents, paints, degreasers, thinners, and pesticides, as well as other materials such as batteries, pressurized containers, and unclassifiable items. Other items such as tanks, drums, or vessels will be managed as hazards until proven othetwise.

During the unearthing of the landfill material, significant care will be employed to identify, log, and remove unknown tanks, vessels, and potentially dangerous containers. Such items found during the earthwork will be profiled and disposed in accordance with applicable laws and regulations.

1.4.2 Contaminants of Concern

During the comprehensive assessment performed by Leighton in 1993, the physical and chemical aspects of the landfill were investigated. During their assessment, samples were collected and analyzed for constituents of potential concern (COPCs) including lead, total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs), semi-volatile organics (SVOCs), pesticides, polychlorinated biphenyls (PCBs), oil and grease, CCR metals, and biogenic material. In addition to the quantification of COPCs in the solid matrix, Leighton assessed the presence of soil gas within the landfill. The results of their soil (solids) investigations revealed exceedances in total lead levels. The soil gas studies showed that methane was not present above the 0.05% reporting level in any of the samples, nor were VOCs detected in the collected gas samples.

A review of the historical records indicates that the site assessment completed by Leighton's in 1993 adequately addressed the presence of COPC for that period of time. Advancements in toxicology and chemistry revealed that additional COPCs might be present in the burned landfill material. Those COPCs included polychlorinated dibenzo-*p*-dioxin and polychlorinated dibenzofuran (PCDD and PCDF) compounds and polycyclic aromatic hydrocarbons (PAHs). As a result of these advancements, the DTSC required that the presence of these compounds be assessed prior to the remediation of the Site.

During March 2003, TSG performed a data gap (remedial investigation) assessment to determine whether PCDDs, PCDFs or PAHs were present in the burned landfill material. During that assessment, TSG also assessed the presence of metals and PAHs in the area of the former retention ponds, located on the southern portion of the Site (Figure 2). In addition, at location B6, elevated concentrations of volatile organics were present as landfill gas. A flame ionization detector (FID) was used to monitor the presence of landfill gas during that assessment. An FID is a non-specific monitoring device and collectively measures the sum of the volatile organic compounds.

The results from the March assessment revealed that the presence of PCDDs and PAHs were detected only in the burned landfill material, but were absent in the underlying native soil. The results of that investigation, in conjunction with the previous assessment data indicate that lead and PCDDs are the only two constituents of concern (COCs) at the Site. All other constituents are below regulated levels. Total lead levels in the landfill debris range from below detection limits to 1,470 milligrams per kilogram (mg/kg) and soluble lead levels, by Title 22 Waste Extraction Test, range from 0.6 to 78.4 milligrams per liter (mg/l). No samples, however, were found to exceed RCRA's toxic characteristic leaching potential (TTLC) concentration of 5.0 mg/l. Copies of Leighton's tabulated data from their 1993 assessment is included in Appendix B.

All COCs exceeding regulatory limits are contained to the debris itself. With the exception of background levels of metals that are inherently present in soil, no other COCs were detected in the native soil beneath the landfill material. This can be attributed to the facts that the environment of the landfill is extremely arid and the COCs have low relative solubilities in rainwater.

1.5 ALTERNATIVE REMEDIAL TECHNOLOGIES CONSIDERED

An evaluation of potentially viable remediation alternatives was performed in consideration with the ultimate value of the landfill property. The criteria for that evaluation included time/duration, permissibility, effectiveness, environmental protection, public health and safety, cost, and technological applicability.

1.5.1 No Action

With the exception of the surface hazards, the Site assessment data indicates that the buried landfill material does not pose a significant risk to the environment in its current state. However, in order to redevelop the 36.6-acre parcel, the contents of the landfill must be properly compacted, the surface regraded, and drainage controls implemented. The alternative of No Action would not improve the environmental condition of the property nor would it enable the landfill portion of the property to be developed. No Action is therefore an infeasible alternative for the proposed development.

1.5.2 Chemical Stabilization or Fixation

Technologically, chemical stabilization or fixation may have some benefit; however, the property could not be redeveloped without significant earthwork and associated costs. The evaluation of those alternatives reveals that the cost to implement those technologies is three to four times greater than the value of the "clean" property.

1.5.3 Excavation and Removal

The option of excavating and removing the landfill material would be costly and have underlying hazards. The process of removing, sorting, and loading the landfill debris into trucks is generally an uncomplicated endeavor. However, once the waste material is on the road, potential complications increase. Such complications include increased truck traffic, a significant amount of dirt and dust deposited on local road surfaces, risks of traffic accidents, and the loss of miscellaneous trash during transport.

Others whom endeavored into developing the Site considered this option. Assuming historical volumetric calculations are correct, approximately 500,000 yd^3 of material would be removed from the Site. Using a density conversion of 1.2 $tons/yd^3$, approximately 600,000 tons of waste would be disposed off site. Applying conservative costs for disposal ($31/ton), trucking ($8/ton), and earthwork ($5/ton), the cost would be approximately $26,400,000; significantly more than the value of "clean" land in the area. These prices take into consideration the fact that the landfill material must be disposed as a mixture of hazardous and non-hazardous waste. These costs therefore increase significantly due to the additional sampling, segregation, and profiling required for off site disposal. When considering the additional costs to import replacement fill soil, the price is even greater. In addition, there would be more than 60,000 trucks (waste haulers) entering and leaving the Site to accomplish that objective. These aggregate costs would be greater than the value of the property, making development impossible.

1.5.4 Excavation and Replacement

This alternative entails removing the waste material, temporarily stockpiling, and replacing it within the original footprint of the landfill. As the material is removed, it would be examined and the materials documented in the field logs. Potentially hazardous wastes will be profiled, and if necessary, disposed in accordance with their waste characteristics.

The waste would be redeposited outside the locations of potential structures, beneath paved parking surfaces. Prior to the redeposition, soil with lead concentration below 230 mg/kg (site-specific cleanup goal) from beneath the landfill would be removed to generate cover material and to provide the necessary space for the deposition of the debris. Once in place beneath the parking lot area, capping material (i.e., the soil mined from beneath the landfill) will be placed on top of the debris for geotechnical and environmental purposes. Considering all remediation alternatives and corresponding development plans, this option is most feasible.

1.6 REMEDIAL ACTION: SOURCE AREA EXCAVATION

The proposed plan is simple and can be summarized as three basic components; removal of the landfill material, mining of soil from the basement, and redeposition of the landfill material and mined soil. All existing landfill material, with the exception of materials considered potentially hazardous (see Section 1.4.1), will be redeposited within the footprint of the existing landfill.

The initial groundbreaking will expose the landfill debris. The mixture of debris and soil used as the original cap material will be removed to expose the native soil beneath the refuse. In the areas beneath the proposed parking areas, the basal soil will be sampled to verify that it contains total lead levels below regulated levels (See Section 1.6.1 for a discussion of those objectives). Following satisfactory confirmation sampling of the soil, it will be mined to depths ranging from 3 to 9 feet. The clean fill will then be temporarily stockpiled for later use as fill beneath the proposed structures and as capping material. In the areas beneath the proposed structures, the landfill debris will be removed, confirmation samples will be collected from the underlying soil, and if deemed clean, the areas will be prepared for backfill. Following successful confirmation sampling, the previously mined and stockpiled soil will be used to backfill the excavations to grade. This will permit the new structures to be built upon certified clean and compacted fill, without the risk of differential settling. This will also provide a "clean" closure status in these areas. Details regarding the earthwork were provided in a letter prepared by GeoSoils, Inc., the engineering firm hired to perform the geotechnical services. Geotechnical details for the project are included in the report entitled *Geologic and Geotechnical Engineering Report,* prepared by GeoSoils Consultants Inc., dated July 22, 2003. That report is submitted under separate cover.

Beneath the parking areas (generally in the central portion of the development), the overall excavations will be up to 9 feet deeper than those beneath the proposed buildings. These deeper excavations will accommodate the excess waste generated from the building areas. The debris/soil mixture will then be backfilled and compacted to approximately 3 feet below final grade. Finally, the mined soil will be used to cap the recompacted landfill material. Again, the process is simple and may only be complicated by the presence of potentially hazardous materials.

1.6.1 Cleanup Objectives

The cleanup of the former landfill Site will be divided on the basis of occupied and unoccupied areas on the Site. The building will be occupied by workers and will lie atop native soil that is free of contaminants that are present in the landfill material. The compacted landfill material will be restricted to the area beneath the central parking area at the Site (Figure 3).

Following the removal of the landfill material, the footprints of the building will be sampled for the presence of lead to document the removal of the landfill waste. The soil will be sampled using X-Ray Fluorescence (XRF), with periodic confirmation by a fixed laboratory. The rationale for using XRF is based on the fact that it is a proven technology for the levels of lead found on the Site, and more importantly the simple economics of remediation work. At the scale of the proposed operation, only minutes of down time will cost thousands of dollars and could potentially prevent the project from being completed on budget. However, XRF is not as accurate or precise as the fixed laboratory and, therefore, the cleanup objectives will be conservatively low. We are proposing the cleanup objective of 230 mg/kg, which is less than one-third the PRG for an industrial setting. These proposed objectives also consider that the Site will be capped with pavement/buildings, and that lead is a non-volatile constituent.

Within the central portion of the Site, the landfill material will be consolidated, compacted, and capped with clean fill soil. All debris (with the exception of drums, vessels, or containers shown to be hazardous) will be placed within the buried cell. In summary, all landfill material will be contained beneath a 3-foot cap of certified clean and compacted fill beneath the central parking area. The material beneath the structures will be verified to contain < 230 mg/kg lead and will consist of only native soil. A discussion of potential landfill gas control is included in Section 2.6.

1.6.2 Excavation

The excavation will be performed with large-scale construction equipment, including earthmovers, scrapers, bulldozers, and loaders. Following the removal of the landfill material, clean soil will be mined from beneath the debris in the areas of the parking lots. The recovered fill will be used to replace the landfill material beneath the proposed structures and will also be used as a capping material over the entire landfill mass. Prior to usage, that soil will be sampled and certified as clean fill.

The advantages of using the soil mined from the Site are two-fold. First, the soil is easily accessible with the on-site construction equipment; and second, the soil is native to the Site and is structurally compatible with the un-excavated soil.

At the end of each workday, temporary stockpiles will be properly secured. Care will be taken each day to place qualified cover material on top of the stockpiles at day's end. The cover material will not have measurable VOC emissions (i.e., OVA readings will be below ambient levels) and will consist of excavated soil from below the landfill materials. It is anticipated that the surface of the temporary stockpiles will be as secure as or provide better protection than the current surface of the site, which contains exposed landfill debris. The temporary stockpiles will be flat, and will be compacted after placement of cover material. Additionally, the stockpile location(s) will be equipped with a perimeter silt fence at the downgradient location as an additional erosion protection. At the end of each workday, the stockpile surface condition, the condition of the silt fences, and any additional erosion control measures will be inspected and deficiencies will be corrected. Vehicles or other equipment will not be allowed to travel or stage near the stockpiles.

1.6.3 Soil Sampling Grid and Sample Rationale

Along the base of the excavation, we are proposing to collect soil samples for analysis of lead at the intersection points of a 100-foot square grid (Figure 4). This sampling of over 133 locations will serve to verify the removal of the landfill debris and associated COCs. According to the engineering and geotechnical professionals, the excavation will have sloped walls to accommodate the ingress and egress of the large-scale earth moving equipment. Therefore, there will not be vertical or sub-vertical sidewalls.

As documented in the body of analytical information, lead is present throughout the landfill material, with little correlation to the color or physical characteristics of the waste. In addition, soluble lead has been documented within the landfill debris. Therefore, lead is the logical driver for the verification sampling. The lead cleanup goals are conservatively proposed at 230 mg/kg.

Polychlorinated dibenzo-p-dioxin (PCDD) compounds represent the other COC at the PSL. Unlike the lead, the PCDD compounds are not believed to represent good candidate compounds for assessing cleanup criteria (clean verification). PCDD are predominantly present in the burned material, as documented by the sampling conducted in March of this year. That burned material is easily identifiable in the field and will be managed accordingly. Analytical information also confirmed that, where the PCDDs existed in the landfill material, the levels in the underlying soil were below detection. This is likely due to the PCDD compounds' low relative solubilities and the extremely arid climate. Therefore, TSG does not propose to analyze for PCDD compounds during clean verification sampling.

In addition to the above rationale, the logistics of the remedial efforts would be severely encumbered if PCDD were sampled along the floor of the excavation. The most significant factor is the required turn-around time for the analysis of dioxin compounds. With analytical turn-around times of 10 or more days, the earth moving operations would have to cease until results are obtained. This creates two obstacles in the remedial process. The first being the South Coast Air Quality Management District (SCAQMD) restrictions [Rule 1150] associated with an active excavation. There are time limits on the excavation or stockpiling activities. Delays on the order of 10 days may result in SCAQMD violations. The other obstacle would be the disruptions in the construction schedule. The slow analytical process would require significant stand-by time or demobilization from the Site until results are received. Either or both of these conditions would result in significant cost to the project, making it uneconomical.

Coupled with the more widespread distribution of lead and the ability to visually identify debris with potential PCDD compounds, remediation can be completed successfully and safely by using lead for confirmation.

1.6.4 Material Segregation

The earthmoving and construction activities will require very little material segregation. The landfill waste will be removed by earthmovers and temporarily staged on site. The underlying native soil will then be sampled for the presence of lead. After the soil is confirmed to meet the cleanup goals of 230 mg/kg, additional soil will be removed as surplus fill and to achieve the final elevation within the future landfill cell. Following removal of soil to the required depths, the landfill debris will be placed back into the area of the future landfill cell, compacted to meet local codes, and capped with a minimum of three feet of native soil.

Unanticipated segregation will occur in the event that a vessel, tank, drum, or similar container is discovered in the landfill debris. Upon discovery of such items, the DTSC will be notified, and the objects will be immediately secured, inspected for damage, and prepared for analysis and characterization. The disposition of those items will be contingent their physical and chemical properties.

1.6.5 Offsite Disposal of Waste

Items suspected or identified as hazardous wastes will be immediately placed in labeled, 40-cubic-yard, hazardous waste containers. The items may include tanks, vessels, or containers that are suspected of containing chemicals or other hazardous materials. The waste types and quantities of wastes will be inventoried and documented in the daily field logs. Disposal of hazardous or potentially hazardous wastes will be performed in accordance with all applicable laws and regulations.

1.6.6 Recycling

Materials with recyclable value may be stockpiled and sold to an appropriate recycling facility. It is expected, however, that the cost to stockpile, move, and transport recyclable materials may be greater than their actual value. Recyclable materials such as concrete and other aggregate will not be considered for recycling.

1.7 DEED RESTRICTION

The plan proposed herein will provide long term safeguards to the Site workers and local public by taking measures that mitigate the potential exposure to the COPCs at the Site. These measures include consolidating the landfill material to an area beneath the parking surface in the central portion of the Site. Thus, no landfill material will be present beneath any of the future buildings at the Site. To provide further safeguards, TSG is proposing a deed restriction that precludes future construction of buildings above the landfill material. In addition to that restriction, engineering controls will be implemented to prevent unqualified personnel from performing excavation or invasive work within the capping material that overlies the landfill material.

1.8 INITIAL STUDY/NEGATIVE DECLARATION

In accordance with the California Environmental Quality Act (§ 21000 et seq., California Public Resources Code) and implementing guidelines (§ 15000 et seq., Title 14, California Code of Regulations), the DTSC or other qualified professional will prepare the Initial Study (IS) for this project. For this project, MGresolutions of Pasadena, California has prepared the IS. The IS will provide a brief description of the physical environmental conditions which exist in the area affected by the proposed project, and an analysis of whether or not those conditions will be potentially impacted by the proposed project. The IS will present an individual evaluation of 17 environmental resources that may be potentially affected. The following conditions will likely be evaluated for possibly affecting the project area in a negative manner as a result of the proposed project:

- Aesthetics
- Agricultural Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Cumulative Effects
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation and Traffic
- Utilities and Service Systems

2.0 ENGINEERING DESIGN

2.1 SITE SURVEY

Mainiero, Smith and Associates, Inc. prepared a professional boundary and topographic survey of the Site. A copy of their March 14, 2003 topographic map is included in Appendix C.

2.2 DESIGN BASIS

The preliminary removal action and development engineering designs are currently being prepared and updated to reflect the most recent layout of the proposed development. A copy of the proposed development plan is included in Appendix D (permitting, architecture modifications, or engineering criteria may alter the plan). The respective professional firms will prepare the final engineering design documents following approval of this plan. Copies of those final architectural and engineering documents will be supplied to the DTSC.

2.3 DESIGN DRAWINGS

Professional prepared engineering design documents will be generated for the earthwork and construction phases of the project. Copies of those plans and corresponding drawings will be supplied to the DTSC.

2.3.1 Emission Management and Dust Control

During the remediation and construction phases, air monitoring will be performed to protect Site workers and to prevent dust and odor violations under the terms of the required air permits, primarily SCAQMD's, Rule 1150 Plan. Conditions in the required air permits are extremely stringent and essentially restrict any fugitive dust emissions. In an effort to meet these requirements at the Site, dust monitoring will be performed in the active and inactive work areas. Intensive dust monitoring and the subsequent mitigation program will serve as the foundation for the worker exposure monitoring.

All work will be conducted with the proper emission permitting. Engineering control measures will be implemented to minimize nuisance and fugitive emissions from the work areas. The minimization of the potential emissions will be conducted in accordance with the aforementioned rules and regulations. Water trucks and on-site water supplies will be used to control dust and potential emissions while excavating and processing soil.

If necessary, additional measures will be employed to reduce the emissions of VOCs and/or volatile petroleum hydrocarbons, if present. Under the conditions of SCAQMD Rule 1150, if emissions exceed designated thresholds, the SCAQMD will be immediately notified and mitigation of the fugitive emissions will be performed.

2.3.2 Air Monitoring

Air monitoring will be performed to protect the health of the workers and to comply with the required permits. Dust and potential landfill gases will be monitored throughout the remediation process. Details regarding the air monitoring procedures and protocol are provide in the Health and Safety Plan, dated November 5, 2003 and the Excavation Management Plan, also dated November 5, 2003.

2.3.2.1 Fuaitive Dust

Fugitive dust will be monitored within the work areas with real time dust monitoring devices and along the perimeters of the Site with high flow particulate collection equipment. Currently, TSG is working with the SCAQMD and equipment vendors to refine the equipment alternative. The screening process also requires the determination of whether the chosen equipment is capable of monitoring sufficiently low particulate concentrations. These detection levels must meet the data requirements in an effort to calculate potential exposure risks to workers and the local public.

2.3.2.2 Landfill Gases

The field personnel will use a flame ionization detector (FID) or photo-ionization detector (PID) which can be calibrated to respond to nearly all organic compounds. The FID will be calibrated to a pre-determined mixture of methane and air at the factory. Each day the FIDs will be recalibrated using the manufactures' specifications and procedures.

2.4 LANDFILL CAPPING

Following compaction of the landfill debris/soil matrix, a 3-foot soil cap will be placed above the landfill mass. The cap will be placed beneath the parking areas (where the landfill debris is located) and will provide the necessary engineering safeguards for geotechnical stabilization. In addition, the cap will serve as environmental insurance to protect the landfill from surface water infiltration and provide a buffer zone during utility installations.

2.5 DRAINAGE CONTROL

Surface and subsurface drainage controls will be constructed across the proposed development. The surface controls will include standard storm water contouring with flow directed toward a subsurface retention basin. The retention basin will be lined and located outside the footprint of the landfill material. The proposed development will also include planters located above the landfill material. These planters will be lined with impermeable polyvinyl chloride (PVC) liners and plumbed to the retention basin. This type of drainage control system is currently in use at other landfill sites in California and will prevent rain and irrigation water from entering the landfill material.

2.6 LANDFILL GAS CONTROL

2.6.1 Conceptual Evaluation

In an effort to apply the correct technology and appropriate scale of that technology, TSG evaluated the objective of the landfill gas control system. In performing that evaluation, there were a number of questions that were considered while engineering the conceptual landfill gas control system. Nine questions and responses are presented below for your analysis:

1. *Will the age and setting of the landfill have any effect on the production of landfill gas?*

   Yes. The landfill was active during the early 1930s until the mid-1960s, receiving household refuse and construction debris, therefore, the age of that material ranges from approximately 40 to 70 years. Furthermore, the Palm Springs region is classified as extremely arid, the burial depth of the landfill material is shallow (approximately 21 feet), and the surface is capped with a thin veneer of sandy soil. These conditions significantly decrease the potential of residual landfill gas.

2. *Will the content of the landfill have any effect on the production of landfill gas?*

   Yes. The waste disposed in the landfill was predominantly household refuse and construction debris. With the exception of the wood contained in the construction debris, the remaining construction materials have little potential to produce landfill gases. The organic matter contained in the household waste does, however, have potential to produce landfill gases under the reducing conditions. The mass proportion of that organic matter is unknown and is the prime consideration in the design and function of the landfill gas control system.

3. *Is there assessment data that documents the presence of landfill gas?*

   Yes. The site assessments performed by Leighton and Associates, Inc. (Leighton) in 1987, 1988, 1989, and 1993 documented the presence of decaying organic matter. Leighton documented this by the presence of odors that were regarded as characteristic of decaying landfill refuse. Leighton also performed a soil gas study in May 1993 and determined that methane gas was non-detectable (<0.05 percent) in all ten of the randomly selected sample locations. In March 2003, TSG was on site to perform the last stage of site assessment. Drilling at location B6 (in the southwest portion of the landfill debris), volatile organic compounds were detected at 851 parts per million with a hand-held flame ionization detector, calibrated to 100 ppm methane gas.

4 *Will the construction and/or remediation activities increase the potential of landfill gas accumulation?*

No. The remediation and construction activities should not chemically alter the condition of the landfill refuse/debris. The physical condition of the waste will be changed due to some homogenization and the final compaction.

5 *Will the location of the landfill material relative to buildings increase the potential for landfill gas accumulation in those buildings?*

No. The proposed location of the buried landfill material will be set back from all buildings and will be restricted to the area beneath the paved parking surface. The proposed location of the landfill material will thus decrease the potential for gases to accumulate beneath the future buildings.

6 *Will the cover material and improvements that overlay the landfill material effectively seal the top surface of the landfill? Will they divert the flow of potential landfill gases?*

Unlikely. The cap material that will overly the landfill material will consist of 3 feet of native soil, approximately 6 inches of road base, and 3 inches of asphalt. The native soil at the Site is predominantly sand and is thus relatively permeable. The base material will also be coarse-grained and possess similar soil properties. The asphalt that ultimately serves as the parking surface is also permeable (10^{-3} to 10^{-7} cm/s; Lindeburg, 2001), thus enabling landfill gases to migrate vertically, directly to the atmosphere. It is highly unlikely, considering the rate of landfill gas production, that the overlying surface cap will divert those gases to the areas beneath the buildings.

7 *Will there be a pressure differential between the soil in the parking lot and the soil beneath the buildings?*

Yes. It is likely that due to differential pressures inside the buildings caused by heating and cooling, induced air flow and pressure changes that result from the HVAC system, and chimney effects within buildings, the air pressure may be lower beneath the buildings.

8 *What are the permeabilities of the native soil relative to the foundation materials?*

The permeability of the native soil is in the range of 10^{-2} cm/s, whereas, the permeability concrete is in the range of 10^{-10} cm/s (Lindeburg, 2001). These values indicate that the permeability of the native soil is approximately eight orders of magnitude greater than the concrete foundations of the proposed buildings. It is, therefore, highly unlikely that landfill gases will migrate through the concrete foundations and accumulate in the buildings.

9 *Will the engineering design be able to accommodate the potential accumulation of landfill gas beneath the buildings?*

Yes. The 4-inch diameter PVC vapor collection and conveyance piping will be installed on 50-foot centers. This design will be significantly over sized for the proposed application. The maximum flow through the 300-foot sections (Major A and Major B, Figure 5) of that piping will be at least 400 standard cubic feet per minute (scfm) using conventional blowers and equipment. A conceptual engineering layout is illustrated on Figure 5 and general engineering specifications are presented on Figure 6 and in Appendix E.

2.6.2 Plan Overview

Following placement and compaction of the landfill debris, a subsurface network of vapor recovery piping (well screen) will be installed within the base material beneath the concrete foundations of the future buildings and above the landfill material (Figure 5). The vapor collection piping will be placed approximately 1 to 3 feet below grade, with each section manifolded to dedicated monitoring points throughout the proposed development.

2.6.3 Piping Configuration

For the vapor collection piping beneath the buildings, the screened segments will be constructed on 50-foot centers. In the parking area, above the landfill material, the screened segments of piping will be spaced on 200-foot centers. All collection piping will have a minimum diameters of 4 inches. The piping material will consist of SCH 40 PVC and the screen will be machine slotted for uniform consistency. It is anticipated that the primary trunk line(s) in the parking area will be 6- to 8-inch diameter, whereas the conveyance piping beneath the buildings will be 4-inch diameter (Figures 5 and 6).

The proposed trenches will be at least 6 inches wider and deeper than the diameter of the buried pipes. For example, 4-inch piping will be installed in trenches with minimum dimensions of 10-inchs by 10-inchs. The final engineering design and dimensions for the piping network and associated equipment will be provided to the DTSC following the architectural design and construction engineering for the development.

At the terminus of the individual vapor collection segments that underlie the buildings, vaults will be positioned directly adjacent to the buildings. The vaults will contain monitoring ports (air velocity and vacuum), sample valves with hose barbs, and ball valves retrofitted with Viton™ seals (Figure 6). Those vaults will also be set up to accommodate connections for mechanical vapor extraction piping (if elevated concentrations of well gases accumulate). That piping would extend from the vaults, along the exterior of the buildings, and onto the roof tops where the blowers can be mounted. For the large vapor collection network constructed beneath the parking lot, there will be individual well vaults that contain similar monitoring ports and equipment to those on the individual networks. In addition, the large network will be manifolded to a single location adjacent to Building Major F (or a similar structure). At that vault, there will be another set of sample ports and valves to enable the field technicians the ability to monitor the performance of the entire vapor collection network.

2.7 LANDFILL GAS RECOVERY SYSTEM MONITORING

Immediately following the construction of the development, a monitoring program will be implemented to determine if methane or other gases are accumulating in the recovery network. This monitoring shall be performed initially on a monthly basis for the first year and then quarterly thereafter. Monitoring will continue on a quarterly basis until it is proven that gas buildup is not occurring or at which time concentration trends are established. In the event that gas concentrations approach explosive or toxic levels or exceed odor thresholds, low flow vacuum pump(s) will be connected to the piping network to purge the gases from the vapor collection piping. These types of pumps can be solar, wind, or electrically powered to simply induce a low pressure pathway through which the gases are discharged. In the event that system upgrading is warranted, the piping network will be retrofitted with risers that attach to the outside walls of the buildings. The vent risers will then be manifolded to the low flow pumps to remove the accumulated gases.

As discussed above, the landfill gas recovery system will be monitored for the presence of potentially toxic, regulated, and fixed gases. The vapor recovery network will be subdivided into approximately 25 segments, each with vaults containing valves and sample ports for collecting gas/vapor samples. The sample ports (one for each leg of the piping network) will be monitored in the field with a hand-held flame ionization detector (FID), and gas/vapor samples will be collected in containers for laboratory analyses. In the event that regulated gases or vapors are present in the piping, the SCAQMD will be immediately notified and permits will be procured, as required. It is more likely, however, that the accumulation of gases/vapors will be negligible, resulting in a reduced monitoring frequency that satisfies DTSC or other governing agencies.

3.0 SCOPE OF CONSTRUCTION ACTIVITIES

3.1 PERMITTING

All work performed during the remediation and redevelopment of the property will comply with City, State, and Federal regulations. Project specific information and the related agencies are presented in the following sections.

3.1.1 Excavation

An excavation permit will be required for the earthwork. The permit will be obtained from the City of Palm Springs Department of Building and Safety. During the remediation phase of the project, soil management and ultimate compaction will be a critical component of the approved development and, therefore, these activities will involve the City's inspection team.

3.1.2 Water

The Desert Water Agency (DWA) is the water supply agency for the subject area. A permit for water usage and a temporary water meter will be required for the on site water supply. The selected contractor (earthwork) will be responsible for procurement of the water permit.

3.1.3 Electrical

A temporary power pole will be required for electrical service. Electrical power will be used to energize the temporary on-site office/trailer, for running and charging equipment, and for night lighting, if necessary. The electrical permit will be obtained through the City of Palm Springs. The selected contractor (earthwork) will be responsible for procurement of the water permit.

3.1.4 Air

The SCAQMD is responsible for the air quality related issues during the removal and recompaction of the landfill material. The SCAQMD rules that apply to the proposed work include Rule 402, Rule 403, and Rule 1150 for nuisance, fugitive dust, and landfill excavation monitoring. Under Rule 1150, the SCAQMD issues site specific permits which require the holders to monitor the perimeter and excavation face for landfill gases such as methane, sulfur compounds, and any speciated non-methane hydrocarbons such as benzene and vinyl chloride. The permit also limits the amount of work face that can be excavated at any given time.

3.1.5 Building

The City of Palm Springs will not likely play a significant role in the remediation phase of the project; however, they will be intimately involved in the redevelopment. There will be numerous permits required, including electrical, mechanical, structural, plumbing, and others. Prior to approval of the proposed development plan, the City's planning department will review, modify, and approve the proposed development. Construction permits will be the responsibility of the general contractor (builder).

4.0 HEALTH AND SAFETY

TSG considers proper health and safety to be a foremost concern. In accordance with the Occupational Safety and Health Administration (OSHA), all personnel involved with the field activities will be required to comply with the conditions set forth in 29 CFR 1910.120, including medical surveillance/monitoring, 40-hour training with current 8-hour refreshers, and applicable supervisory training.

4.1 HEALTH AND SAFETY PLAN

A site specific Health and Safety Plan (HASP) was prepared by TSG on December 15, 2003. It was written as a "stand alone" document and was supplied to the DTSC under separate cover. It will be used as a guidance document by properly trained TSG employees, affiliates, and experienced TSG subcontractors. All TSG subcontractors will be required to follow the requirements in HASP. As directed by the DTSC, any contractors not falling under the submitted HASP will be required to submit their own plan to the DTSC for approval.

The potential physical and chemical hazards have been clearly documented in the HASP, which has been developed specifically for the former PSL remediation project. Any new condition or unanticipated danger that may be considered a potential risk will be immediately presented to the DTSC, and remedies/safeguards will incorporated into the health and safety program.

4.1.1 Engineering Controls and Personal Protective Equipment

Dust mitigation will be required under Rule 1150 for the construction activities at the former landfill site. These engineering controls will be active until the environmental or worker exposure risks are mitigated, or at which time the phase of work no longer warrants active dust mitigation. In addition to dust management, engineering controls will also be implemented to reduce the risks associated with heat exposure. Such controls will include modified work times and durations, shade systems, and cool down zones with ice (or equivalent). Engineering controls with be the first and mandatory step to ensure a safe work environment.

4.1.2 Air Monitoring

Air monitoring will be conducted to protect the health and safety of the on site workers and the local public. Initially, the air monitoring program will be excessively stringent to in an effort to establish a baseline for potential dust and VOC exposures. In addition to real-time particulate monitoring in the work areas, perimeter dust monitors will be used to collect dust samples for chemical analysis. The concentration of COCs in the dust will be documented and compared against maximum permissible exposures for total particulates and lead. Vapor samples will also be collected in laboratory-supplied containers and analyzed for the presence of VOCs and fixed gases.

Following review of the field monitoring data, and with concurrence from the DTSC, PPE will be down graded if the risks are sufficiently low. In the event that engineering controls are not capable of mitigating potential risks, adequate PPE will be worn until the work environment is proven safe.

4.1.3 Soil Ingestion

Only trained and qualified workers will be on site during the remediation activities. All Site workers will be required to comply with the conditions of the health and safety program. That includes usage of proper PPE, proper personnel decontamination, eating and/or smoking in designated areas (following decon), and management of field equipment, gear, and garments.

4.2 EQUIPMENT DECONTAMINATION

Strict decontamination procedures will be employed for the remediation activities. The objectives of the decontamination will be to prevent the introduction of contaminants onto areas designated as clean zones. These clean zones include on- and off-site areas that will not require personal protective equipment. In addition, the decontamination procedures are designed to prevent cross-contamination of equipment, materials, and ultimately personnel.

4.3 SITE CONTROLS AND MANAGEMENT

Access to restricted areas such as the work areas will be strictly controlled during all working phases. Health and Safety measures will be implemented and governed to minimize the potential exposure to unprotected personnel (e.g., vendors/suppliers, visitors, regulators, and workers). Governing these restricted areas will also encompass the necessary medical surveillance, safety training, and maintenance of personal protective equipment. In addition, to further minimize exposures to workers and potential off-site receptors, the stabilization/fixation will be performed indoors, within an existing building on site.

Ingress to the Site will require visitors to sign a visitor's log, which will be maintained for all personnel permitted to enter the different work areas. Physical barriers will be installed between potential exposure zones, with area-specific sign-in logs for tracking the personnel and equipment, in accordance with the HASP. The daily activity log, maintained by the Site Supervisor, will contain a record of all significant activities, including lists of personnel, visitors, vehicles, and equipment entering and leaving the Site. The Site Supervisor's activity log will also document the decontamination procedures, as the specific resource is moving through the decontamination zones.

4.4 POST REMEDIATION RISK ASSESSMENT

At the completion of the remedial excavation and following the placement of the capping material, a human health risk assessment will be performed to confirm that the risks have been satisfactorily mitigated. The risk assessment approach will include the identification of the COPCs, summary statistics on previously identified COPCs, and development of a database that is a representative of the background conditions. Specific details relating to the content of the post remediation risk assessment are provided in the DTSC memorandum dated December 2, 2003, and authored by Dr. Gerald Pollock of the DTSC's Human and Ecological Risk Division.

5.0 PROJECT SCHEDULING

TSG shall notify the City and all involved regulatory agencies, including the SCAQMD and the DTSC, prior to beginning work. The SCAQMD shall be notified in writing when the excavation commences and when it is completed. Work is expected to continue on consecutive working days, but depending upon the progression of the work, interruptions in excavation may occur intermittently. Excavation shall normally be conducted between the hours of 6:00 a.m. and 6:00 p.m. If changes in working hours or days are required because of delays encountered by inclement weather, the SCAQMD will be notified in writing as soon as possible following the change in schedule.

Excavation is expected to commence in the fourth quarter of 2003, after completion of all required permitting. Geiger anticipates a project start date of December 15th, 2003. The estimated time to complete the project is approximately 80 working days. The anticipated project completion date is April 2, 2004.

6.0 REMOVAL ACTION PROJECT MANAGEMENT PLAN

Title / Responsibility	Name	Phone Number
DTSC / Project Manager	Stephen Cutts	(818) 551-2178
Geiger, LLC / Proponent	Mark Gabay	(310) 247-0900
Geiger, LLC / Proponent Program Manager	Brett MacDonald	(661) 755-3689
TSG / Project Manager	Jim Evensen, R.G., C.HG.	(805) 373-9063, ext. 206
TSG / Quality Assurance Manager	Mark Labrenz, R.G., C.HG.	(805) 373-9063, ext. 203
TSG / Engineering	Daniel Grasmick, P.E.	(805) 373-9063, ext. 216
TSG / Staff	Ted Lizee	(805) 373-9063, ext. 215
Contractor (Drilling Company)	Valley Well Drilling	(805) 648-6385
Contractor (Laboratory)	American Analytics	(818) 998-5547. ext. 318
Contractor (Laboratory)	Pace Analytical	(888) 990-7223
Contractor (Disposal)	TBD - Dependent upon analytical results	TBD - Dependent upon analytical results

7.0 IDENTIFICATION OF CONTRACTORS AND REQUIREMENTS

The contractors for implementation of the RAW have not been selected at this time. Geiger or TSG will submit the names of the contractors to the DTSC after the selections have been made. The following standard selection requirements will be implemented.

The contractors must:

- be trained and in full compliance with OSHA regulations;
- be qualified to perform their respective duties. References will be required to confirm such capabilities;
- supply proper licenses for their respective duties;
- carry adequate insurance for their required duties;
- not discriminate against workers for any reason;
- have adequate cash flow to accommodate the scale of this project;
- supply a list of subcontractors for pre-approval;
- have adequate resources to complete the project on time and budget; and
- disclose any previous violations or citations for consideration.

8.0 COMMUNITY RELATIONS PLAN

The Proponent will work with the DTSC to determine whether a Community Relations Plan is necessary. The plan may be as simple as a statement of facts and objectives, or the plan may be adopted from the environmental impacts report or mitigated negative declaration. Communication with the DTSC will continue in an effort to preserve the streamlined and expedited approach. TSG and Geiger will seek further advice from the DTSC on this matter.

9.0 STANDARD LIMITATIONS

All work was performed under the supervision of a California Registered Geologist as defined in the Registered Geologist Act of the California Code of Regulations. The information contained in this remedial action plan represents TSG's professional opinions, and is based, in part, on information supplied by the client. These opinions are based on currently available information and are arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location.

10.0 REFERENCES

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TABLE 1

FIGURES

APPENDIX A

EPA METHOD 8280A
DATA QUALITY OBJECTIVES

APPENDIX B

TABULATED METALS ANALYSES
LEIGHTON AND ASSOCIATES, INC.
AUGUST 6,1993

APPENDIX C

BOUNDARY / TOPO SURVEY,
MAINIERO, SMITH AND ASSOCIATES, INC.
MARCH 2003

APPENDIX D

PROPOSED SHOPPING CENTER DEVELOPMENT,
REEVES ASSOCIATES ARCHITECTS
JULY 2003

APPENDIX E

CONCEPTUAL LANDFILL GAS COLLECTION SYSTEM GENERAL DESIGN SPECIFICATIONS